

# Housing Benefit Claimant Numbers and the Labour Market

**Modelling and analysis**

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# Executive summary

Government plans to reduce Housing Benefit expenditure are based on a gradual, but significant, decrease in the number of claimants over the Spending Review period. This analysis seeks to assess whether the government will achieve the reductions in claimant numbers that are required to limit Housing Benefit expenditure.

Previous research by BSHF identified the sensitivity of Housing Benefit expenditure to changes in the number of claimants. Since that research was published, updated statistics have been released by the government, which suggest that unemployment will be higher than previously forecast. This analysis assessed how changes in the labour market could impact upon Housing Benefit claimant numbers by:

1. Developing a model to explain the relationship between Housing Benefit claimant numbers and labour market statistics, including analysis of time lags;
2. Using that model to assess the possible impact of the labour market on Housing Benefit claimant numbers and expenditure.

The model developed provides a strong description of changes in Housing Benefit claimant numbers.

Short-term forecasts from the model indicate that the number of Housing Benefit claimants may decrease gradually during the first half of 2011 before starting to increase back up to around 4.8 million claimants during the second half of the year.

Medium-term forecasts show quarterly claimant numbers increasing until the end of 2012. If the modelled relationship continues to hold, by the middle of next year there will be almost 250,000 more Housing Benefit recipients than current government estimates suggest. These differences would impact on the level of expenditure on Housing Benefit: expenditure would be £400 million higher than government forecasts in 2011/12, rising to £1.2 billion higher than forecast for 2012/13. This, once again, highlights the sensitivity of Housing Benefit expenditure to increases in claimant numbers.

With the decrease in Housing Benefit claimant numbers set out in the Spending Review appearing increasingly optimistic, the government is unlikely to achieve

the reductions in Housing Benefit expenditure set out in the Spending Review. This highlights the importance of adopting policies to increase employment rather than focusing solely on restricting the levels of Housing Benefit paid to claimants.

# Background

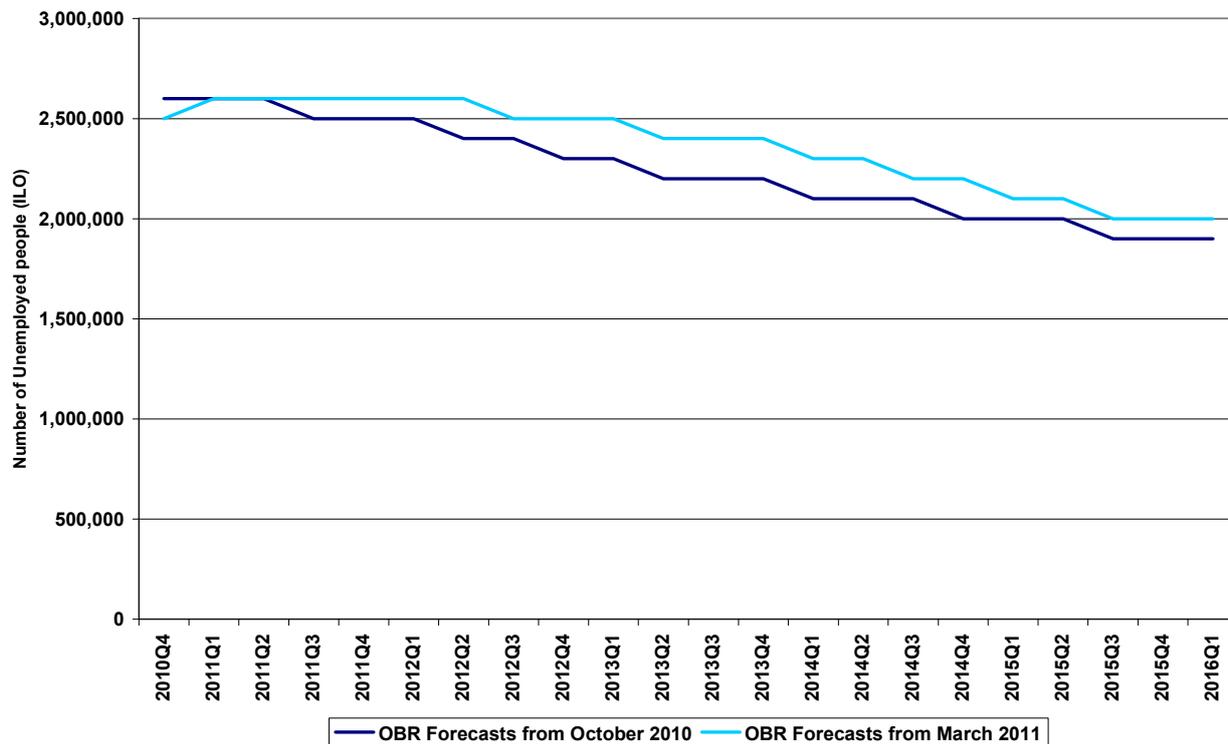
The government is seeking to reduce Housing Benefit expenditure through measures outlined in the 2010 Emergency Budget and Spending Review. Much attention has been paid to proposals that seek to control the amount paid to each household, such as linking increases in payments to the Consumer Price Index (CPI).<sup>1</sup> However, the plan to reduce expenditure is also based on a gradual, but significant, decrease in the number of Housing Benefit claimants during the Spending Review period. The Department for Work and Pensions' (DWP) forecasts for the Spending Review showed claimant numbers peaking at 4.75 million in 2010/11 and dropping steadily to 4.27 million in 2015/16.<sup>2</sup>

Previous research by BSHF (the Building and Social Housing Foundation) highlighted how sensitive Housing Benefit expenditure is to changes in claimant numbers.<sup>3</sup> The analysis was based on data published by the Office for Budget Responsibility (OBR), which provides official government forecasts for the economy and labour market. BSHF presented three plausible scenarios for the possible numbers of claimants over the next five years. The impact that claimant numbers have on Housing Benefit expenditure is striking. Small changes in the underlying assumptions on unemployment and economic inactivity led to large changes in both the number of claimants and overall Housing Benefit expenditure.

It was therefore concluded that the government should place greater emphasis on reducing the number of households that need to claim Housing Benefit to be able to afford their housing costs. This is in contrast to the current focus on controlling the amount of benefit received by households.

However, since that previous research was published in October 2010, additional data and updated forecasts have been released by the government. This new information heightens concerns that reductions in Housing Benefit claimant numbers may not occur as the government had previously forecast. As part of the Budget in March 2011, the OBR presented updated forecasts for a range of economic indicators, including revised forecasts for unemployment, which were higher than the previous estimates released in October 2010 with the Spending Review (see Figure 1). The DWP has also published revised forecasts for Housing Benefit claimant numbers since the Spending Review. These forecasts showed claimant numbers dropping less quickly than earlier estimates and reaching 4.50 million in 2015/16, significantly higher than earlier forecasts for 4.27 million claimants in that year.<sup>4</sup>

**Figure 1: Unemployment forecasts from the OBR**



A reduction in claimant numbers forms a crucial part of the government’s proposals to control Housing Benefit expenditure. This analysis seeks to assess whether the government will achieve the reductions in claimant numbers that are required to limit Housing Benefit expenditure.

# Analysis

This analysis examines whether the government will achieve the reduction in Housing Benefit claimants that it has forecast and on which it has based its projected expenditure savings in this area. In order to investigate this question, analysis of the relationship between the labour market and the number of Housing Benefit claimant was undertaken. This analysis consisted of two parts:

1. Developing a model to explain the relationship between Housing Benefit claimant numbers and labour market statistics, including analysis of any time lags that may occur;
2. Using that model to assess the possible impact of the labour market on Housing Benefit claimant numbers and expenditure.

## Modelling

The production of a model with which to forecast Housing Benefit claimant numbers, and hence potential expenditure, involved three main stages:

- Selection of variables
- Examination of the length of any time lag
- Multiple regression

The **selection of variables** built on previous research by BSHF, which had identified a strong correlation between Housing Benefit claimant numbers and changes in the labour market.<sup>5</sup> For example, there was a strong association between monthly measures of Housing Benefit claimants and the number of unemployed people. The continued existence of those relationships was confirmed using updated data series, with data released between October 2010 and March 2011 (see Appendix 1).

From an understanding of the processes by which people start claiming Housing Benefit, it was hypothesised that there might be a **time lag** between changes in the labour market and their impact on Housing Benefit claimant numbers. There are a number of reasons why this could occur. For example:

- People who become unemployed or economically inactive may choose not to claim Housing Benefit immediately, particularly if they expect to return to the labour market quickly;

- People who become unemployed or economically inactive may not immediately be eligible to claim (e.g. people with assets over a threshold level would need to deplete these before they would be eligible to claim Housing Benefit);
- People leaving the labour market may change their housing in response to their lower income (for example moving from owner occupation to rental accommodation) and then become eligible for Housing Benefit.

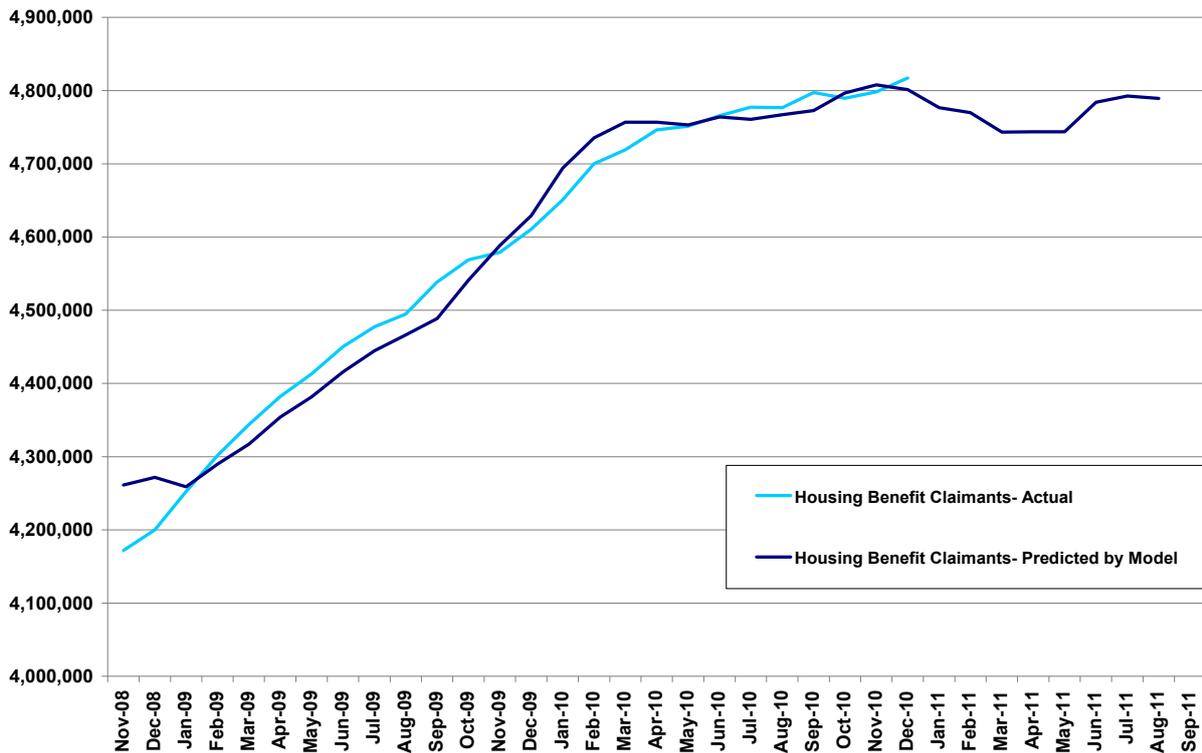
The potential existence of a time lag was tested empirically, by performing a series of linear regressions of each of the explanatory variables against the Housing Benefit claimant count, offset by an increasing number of months (see Appendix 2). This confirmed that Housing Benefit claimant numbers do appear to lag behind labour market factors, and identified that for unemployment the period of lag is nine months.

Finally, **multiple linear regression** was used to examine whether a model featuring more than one measure of labour market activity could provide a more sophisticated (and more accurate) estimate of Housing Benefit claimants than a model relying on a single factor. This led to development of a model where the link between the two labour market indicators (the ILO measure of unemployment and the economic activity rate [EAR]) and Housing Benefit claimant numbers is lagged by nine months. As with any model, caution must be adopted in extrapolating findings too far beyond the data from which it was derived. Further statistical information about the model and its limitations are included at Appendices 4 and 5.

## Forecasting

Using this model, forecasts were made of how Housing Benefit claimant numbers might change. The model provides a strong description of changes in Housing Benefit claimant numbers. However, it should be noted that the model will continue to explain the change in claimant numbers only if the underlying causes of the relationship remain the same.

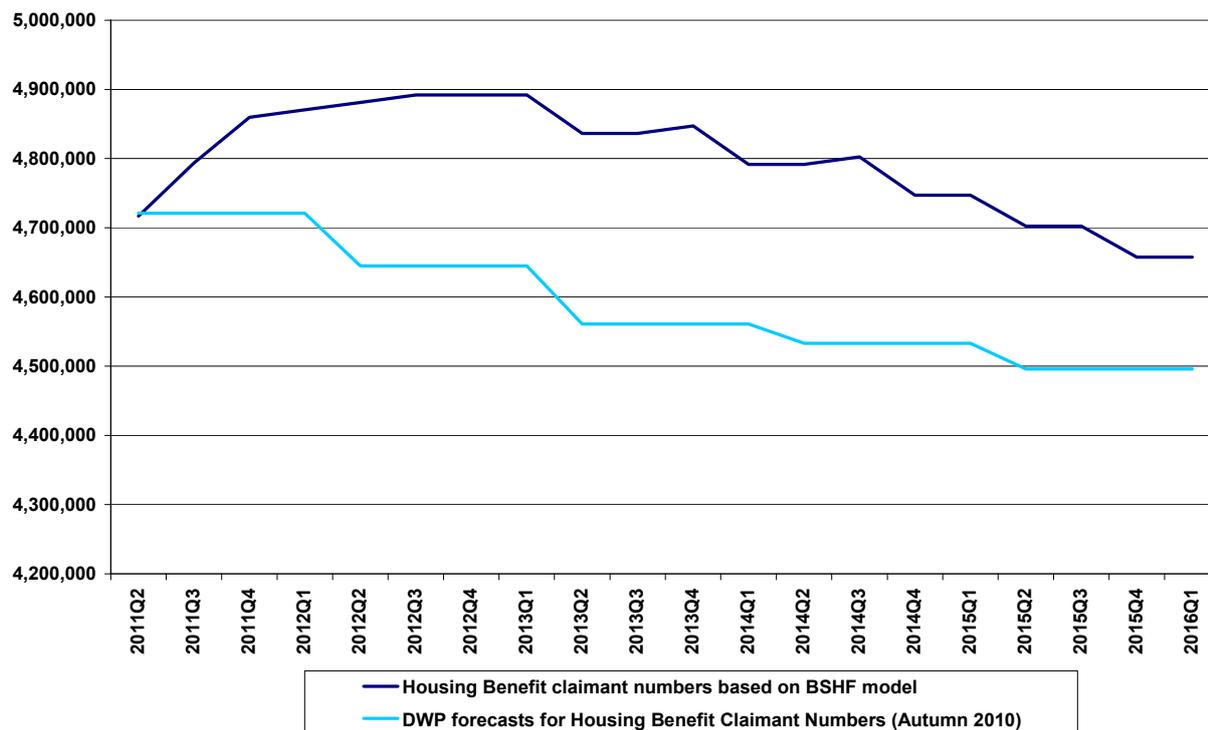
Due to the time lag in the model, different methods can be used for creating forecasts in the short and medium terms. Possible short-term changes in Housing Benefit claimant numbers can be assessed using actual labour market figures that have already been released (see Figure 2). Medium-term assessments of possible changes can be produced using official OBR forecasts of labour market indicators (see Figure 3).

**Figure 2: Projected number of Housing Benefit claimants in 2011**

The model suggests that the number of Housing Benefit claimants will decrease gradually during the first half of 2011. It then forecasts claimant numbers starting to increase back up to around 4.8 million claimants during the second half of the year.

The model has also been used to assess how Housing Benefit claimant numbers might change in the medium term. Quarterly forecasts for the labour market produced by the OBR were used for these projections. These can then be compared against official DWP forecasts of Housing Benefit claimants over the coming years.

**Figure 3: Medium term projections of Housing Benefit claimant numbers**



The numbers of Housing Benefit claimants forecast by this model are substantially higher than those forecast by the DWP. The DWP estimates suggest that claimant numbers will decline steadily until 2016. However, the model developed here suggests that quarterly claimant numbers will increase until the end of 2012. If the modelled relationship continues to hold, by the middle of 2012 there will be almost 250,000 more Housing Benefit recipients than current government estimates suggest. From this peak, this model suggests claimant numbers will then decline steadily. Despite this decline they continue to remain substantially higher than current DWP estimates throughout the current Spending Review period.

These differences inevitably also have an impact on the expected level of expenditure on Housing Benefit. Using DWP data for average Housing Benefit claims and OBR forecasts for inflation it is possible to provide an estimate for the impact of higher claimant numbers on Housing Benefit expenditure. If the modelled relationship continues to hold, Housing Benefit expenditure would be £400 million higher than government forecasts in 2011/12, rising to £1.2 billion higher than forecast for 2012/13. This once again highlights the sensitivity of Housing Benefit expenditure to increases in claimant numbers.

# Conclusions

The new OBR forecasts for unemployment mean that the decrease in Housing Benefit claimant numbers set out in the Spending Review appears increasingly unlikely. Housing Benefit claimant numbers are already at a twenty year high.<sup>6</sup> Given the sensitivity of Housing Benefit expenditure to claimant numbers the government is unlikely to achieve the expenditure reductions set out in the Spending Review.

Therefore, the government needs to place a greater emphasis on reducing the number of people who need to claim Housing Benefit to obtain decent accommodation – particularly through reducing levels of unemployment.

# Appendix 1 – Selection of variables

In previous research, there was found to be a strong association between Housing Benefit claimant numbers and labour market indicators.<sup>7</sup> This analysis was updated to assess whether this association has continued. The association between claimant numbers and the labour market was assessed using the following data:

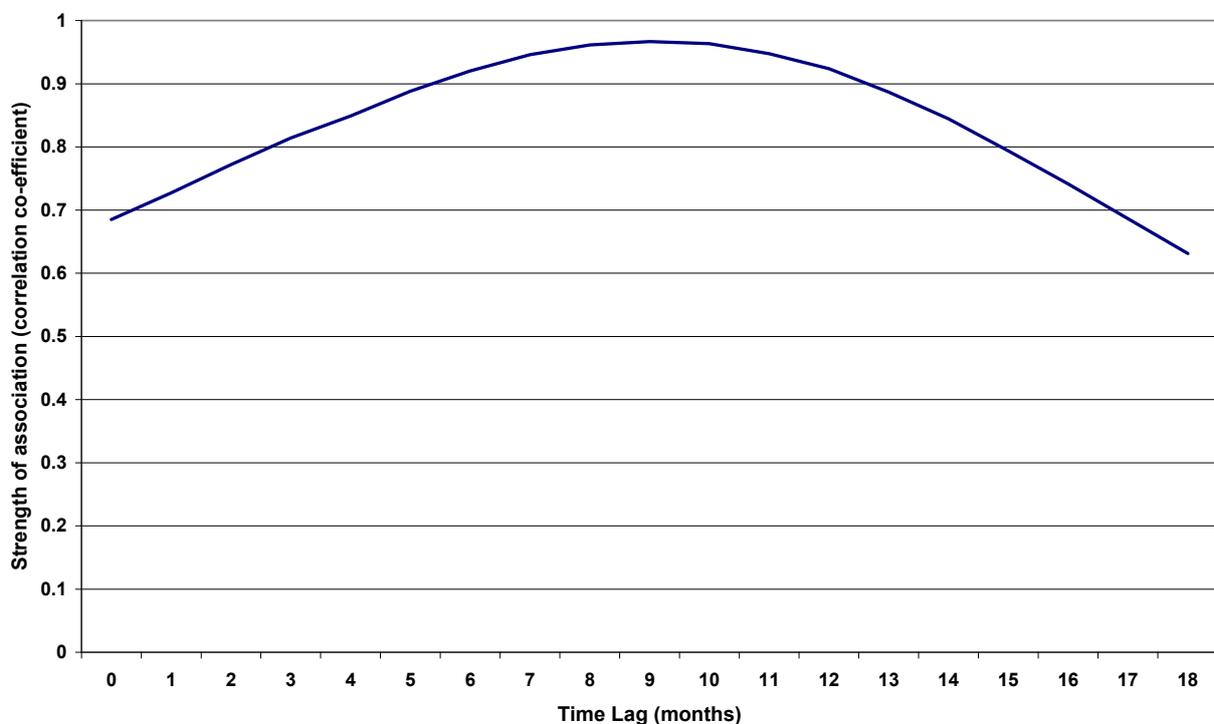
- Monthly figures for Housing Benefit claimant numbers (November 2008 to December 2010);
- Monthly figures for the number of people who are unemployed (November 2008 to December 2010);<sup>8</sup>
- Monthly figures for economic activity rates (November 2008 to December 2010);<sup>9</sup>

A significant positive correlation was again found between Housing Benefit claimant numbers and the number of people who are unemployed ( $r = 0.83$ ,  $N = 26$ ). As found in the previous research there was a significant negative correlation between Housing Benefit claimant numbers and economic activity rates ( $r = -0.75$ ,  $N = 26$ ).

## Appendix 2 – Assessing the time lag

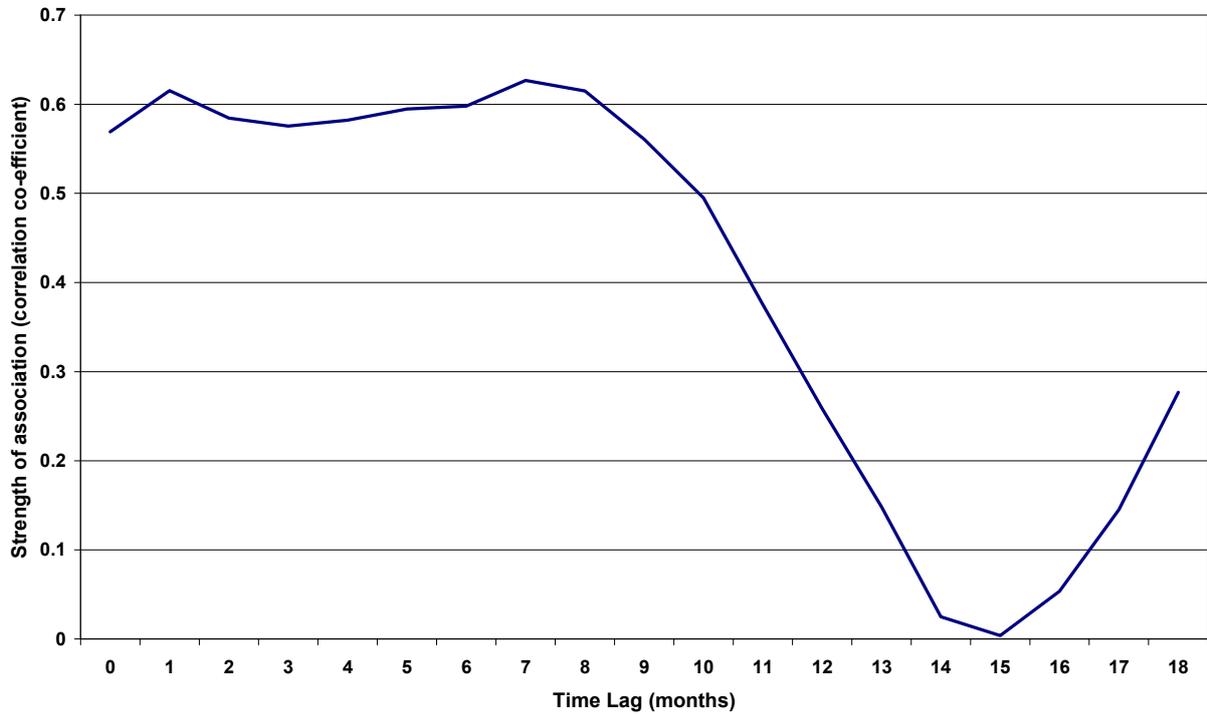
This research assessed whether there was evidence for a time lag, and if so, the length of lag that best explains the relationship. The correlation between the labour market variables (unemployment and economic activity) and Housing Benefit claimants was tested at monthly lags of between one and 18 months. These are plotted in Figure 4 and Figure 5.

**Figure 4: Strength of association between Housing Benefit claimant numbers and number of unemployed people at different time lags**



This analysis demonstrated that the Housing Benefit claimant count does indeed lag behind labour market indicators. For the ILO unemployment measure, there is a clear peak of correlation when the Housing Benefit and ILO data are offset by nine months: the Housing Benefit claimant count lags nine months behind ILO.

**Figure 5: Strength of association between Housing Benefit claimant numbers and Economic Activity Rate at different time lags**



For the EAR data, the pattern of correlation was less clear, with a less strong overall pattern, featuring slight peaks at one and seven month offsets, and approximately constant correlation for offsets up to approximately nine months.

## Appendix 3 – Multiple linear regression

A multiple linear regression was undertaken to combine into one model different labour market statistics and the time lag identified.

One potential pitfall of multiple regression is multicollinearity. This occurs when explanatory variables are highly correlated with each other. As the International Labour Organisation measure of the number of unemployed people (ILO) and Economic Activity Rate (EAR) measure different features of the labour market, it is reasonable to include them both within the same model. However, in undertaking the regressions potential incidences of multicollinearity were monitored for, primarily by monitoring the T-Statistics generated for each variable.

By way of a control, a linear regression of the best ILO data (i.e., featuring a nine month lag) was performed. The key statistics were as follows:

Regression Statistics	
R <sup>2</sup>	0.967
Adjusted R <sup>2</sup>	0.965
Standard Error	38400
Observations	26

Coefficients	
Intercept	3 280 000
Unemployment (ILO) offset by 9 months	603

Multiple linear regression was undertaken for a combination of ILO offset nine months alongside EAR offset by one month, seven months and nine months (the former two to match the slight peaks in correlation; the latter to match the relationship with the stronger variable). The relevant statistics obtained from the regressions are as follows:

	R <sup>2</sup>	Adjusted R <sup>2</sup>	Coefficient of EAR variable	t-statistic of EAR variable
Unemployment (ILO) offset by 9 months Economic Activity (EAR) offset by 1 month	0.972	0.970	131000	2.10
Unemployment (ILO) offset by 9 months Economic Activity (EAR) offset by 7 months	0.967	0.965	-44700	-0.788
Unemployment (ILO) offset by 9 months Economic Activity (EAR) offset by 9 months	0.973	0.971	-107000	-2.34

The final regression (EAR offset by nine months) was identified as being statistically most robust, on a number of grounds. The one month offset regression was identified as producing a model that is logically flawed: the positive coefficient for the EAR variable would indicate that the number of Housing Benefit claimants would fall as people become economically inactive. The seven month offset regression produced a non-significant t-statistic for the EAR variable (significance is approximately  $-2 > t > 2$  for 95 per cent confidence). In addition, the regression with the nine month EAR offset was the one that showed the largest improvement in the adjusted R Squared statistic over the mono-variable regression.

This model tracked the actual outturn of Housing Benefit claimants effectively, particularly for the most recent data.

## Appendix 4 – Key regression statistics for selected model

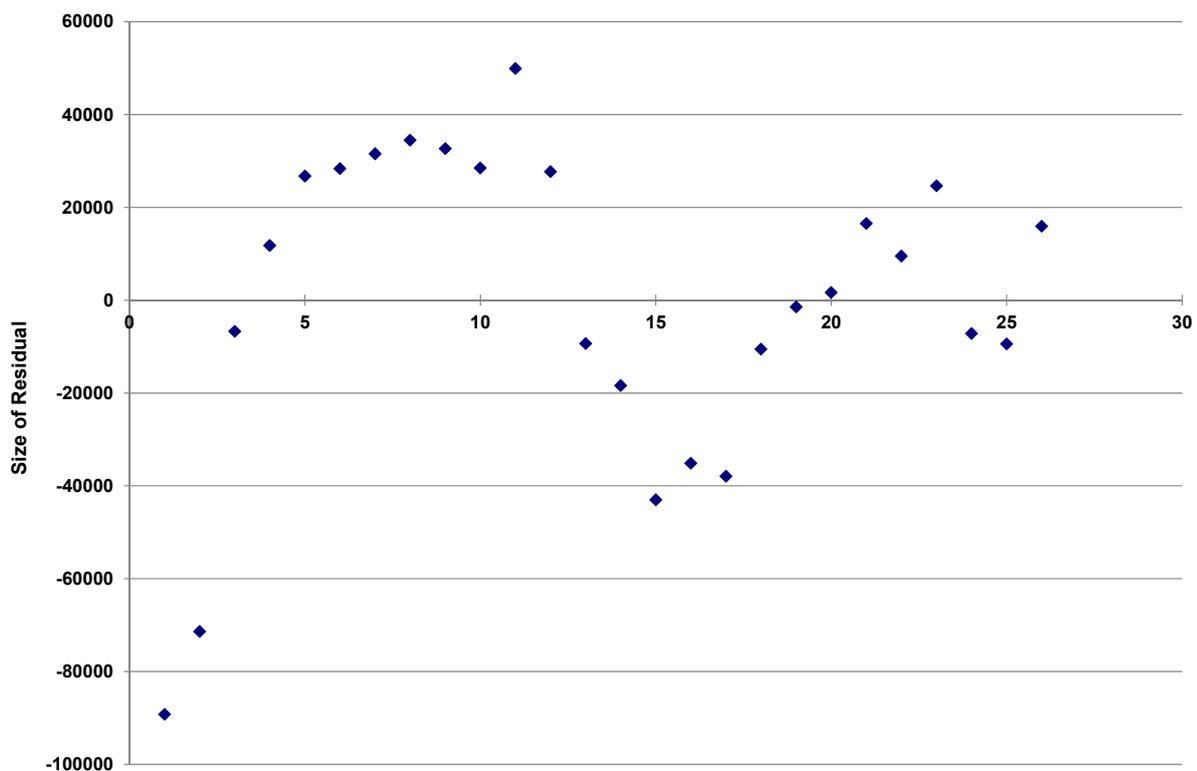
Regression Statistics	
Multiple R	0.986
R <sup>2</sup>	0.973
Adjusted R <sup>2</sup>	0.971
Standard Error	35 200
Observations	26

	Coefficients	t-statistic	p-value
Intercept	10 200 000	3.45	0.00217
Unemployment (ILO) offset by 9 months	554	18.8	1.96E-15
Economic Activity (EAR) offset by 9 months	-107 000	-2.34	0.0284

# Appendix 5 – Residuals in model

As illustrated in Figure 6 below, the residuals – the elements of the variation in the observed numbers of Housing Benefit claimants not explained by the model – follow a pattern.

**Figure 6: Size of residuals over time**



The presence of a pattern is interpreted as suggesting that there is a systematic cause for the difference between the predicted values and the actual ones, and hence that there is at least one further factor missing from the model that would enable it to better explain the observed outcomes.

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# Notes and references

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- <sup>2</sup> DWP (2010) Benefit expenditure tables - Medium term forecast, June 2010, [http://research.dwp.gov.uk/asd/asd4/index.php?page=medium\\_term](http://research.dwp.gov.uk/asd/asd4/index.php?page=medium_term)
- <sup>3</sup> Pattison, B., Strutt, J. and Vine, J. (2010) The Impact of Claimant Numbers on Housing Benefit Expenditure, <http://www.bshf.org/published-information/publication.cfm?lang=00&thePubID=0D3686BE-15C5-F4C0-99EB00984C47C286>
- <sup>4</sup> DWP (2010) Benefit expenditure tables - Medium term forecast, Autumn 2010, [http://research.dwp.gov.uk/asd/asd4/index.php?page=medium\\_term](http://research.dwp.gov.uk/asd/asd4/index.php?page=medium_term). A further update to medium-term projections for expenditure and claimant numbers is due to be published on 21 April 2011.
- <sup>5</sup> Pattison, B., Strutt, J. and Vine, J. (2010) The Impact of Claimant Numbers on Housing Benefit Expenditure, <http://www.bshf.org/published-information/publication.cfm?lang=00&thePubID=0D3686BE-15C5-F4C0-99EB00984C47C286>
- <sup>6</sup> The average number of Housing Benefit claimants between January and December 2010 was 4.758 million compared to 4.757 in 1995/96. Sources: DWP (2010) Benefit expenditure tables - Medium term forecast, Autumn 2010, [http://research.dwp.gov.uk/asd/asd4/index.php?page=medium\\_term](http://research.dwp.gov.uk/asd/asd4/index.php?page=medium_term) and DWP (2011) Housing Benefit and Council Tax Benefit: First release for March 2011, [http://campaigns.dwp.gov.uk/asd/asd1/stats\\_summary/stats\\_summary\\_oct2010.pdf?x=1](http://campaigns.dwp.gov.uk/asd/asd1/stats_summary/stats_summary_oct2010.pdf?x=1)
- <sup>7</sup> Pattison, B., Strutt, J. and Vine, J. (2010) The Impact of Claimant Numbers on Housing Benefit Expenditure, <http://www.bshf.org/published-information/publication.cfm?lang=00&thePubID=0D3686BE-15C5-F4C0-99EB00984C47C286>
- <sup>8</sup> Office for National Statistics (2011) ILO unemployment, all aged 16 and over. Series Identifier MGSC. The dataset is titled "Labour Force Survey: Summary, 1984-2002" and can be accessed directly at <http://www.statistics.gov.uk/StatBase/tsdataset.asp?vlnk=429>.
- <sup>9</sup> Office for National Statistics (2011) Economic activity rate, all aged 16 and over. Series Identifier MGWG. The dataset is titled "Labour Force Survey: Summary, 1984-2002" and can be accessed directly at <http://www.statistics.gov.uk/StatBase/tsdataset.asp?vlnk=429>.

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